Department of the Army Pamphlet 600–3–21

Branch Code 21

Engineer

Headquarters
Department of the Army
Washington, DC
1 August 1987

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SUMMARY of CHANGE

DA PAM 600–3–21
Engineer

Not applicable.

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Engineer

By Order of the Secretary of the Army:

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Figure List

1. DESCRIPTION OF THE CORPS OF ENGINEERS

The Corps of Engineers is a Combat Arms Branch which also has combat support and combat service support roles. Missions encompass military and civil engineering and the related planning, organization, training, operation, and development. Engineer officers are responsible for training and leading troops in combat; topographic, and construction engineering operations; facilities maintenance; civil works programs; and leading Engineer troops in infantry combat operations.

To accomplish this, it is essential that the Engineer officer be well trained and experienced in military engineering and tactics. Assignments will be made on a branch basis. This means that Engineer officers should expect to serve in the several different areas of concentration throughout their careers. Every officer must maintain the capability and flexibility to function in whatever area of concentration is required by the Army.

The Corps of Engineers encompasses four areas of concentration (AOC), described later.

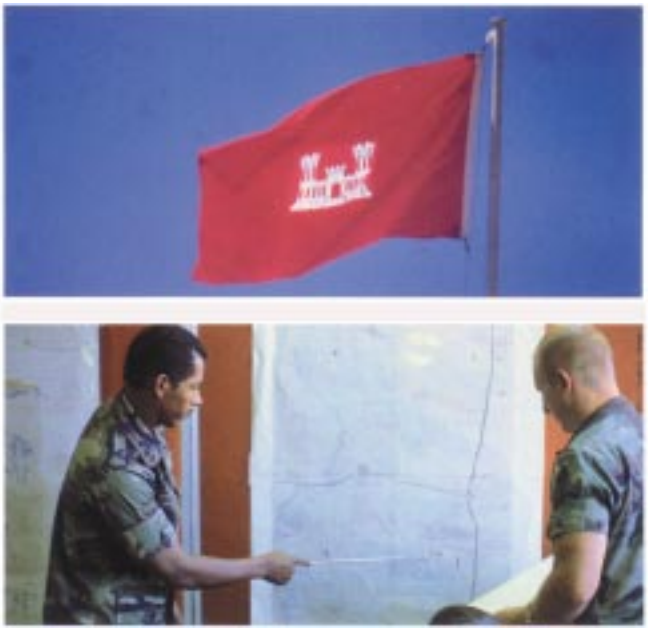

Figure 1. Corps of Engineers

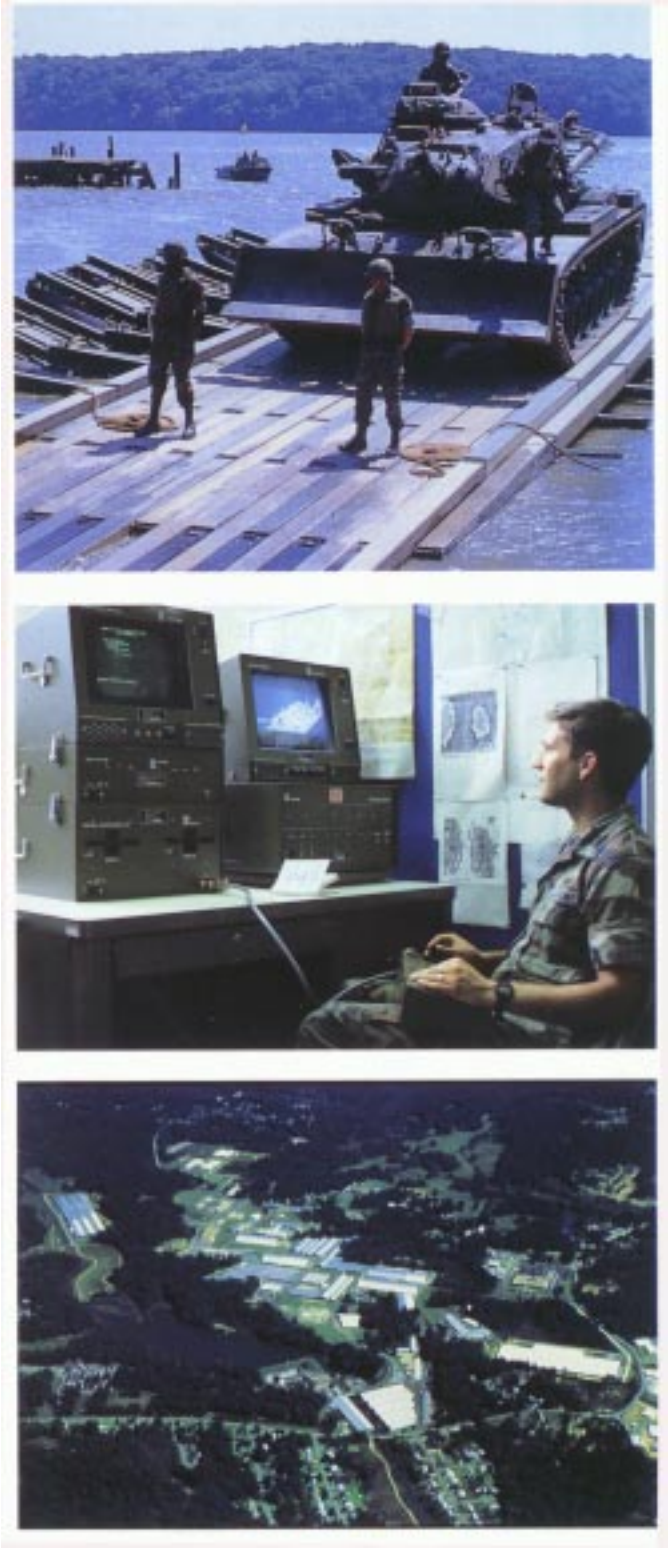

Figure 2. Corps of Engineers

2. ROLE OF THE ENGINEER OFFICER

Engineer officers plan and execute missions relating to engineer support on the battlefield; to include topographic missions, facilities and housing support at military installations. Additionally, the Engineer officer serves as the Army's component to the Department of Defense (DOD) team charged with mapping, charting, geodesy, and military geographic responsibilities, supports military construction programs for Army, Air Force, and other DOD agencies; directs a complex civil works program and undertakes special tasks which range from advancing engineer technology to exporting engineer expertise to friendly nations. The Engineer areas of concentration (AOC) are described in the following paragraphs.

3. GENERAL ENGINEER (21A)

Duty positions which require skills involving general Engineer knowledge and/or experience are found in this area of concentration. Engineer officers are eligible for assignment in a 21A position upon Branch qualification. Examples of duty positions are as follows:

(1) Joint Staffs and Defense agency positions.
(2) Engineer Staff positions at brigade and above.
(3) Instructors in Service Schools, ROTC units, and USMA.
(4) Recruiting, Inspector General, and advisor to Reserve Component Units.

4. COMBAT ENGINEER (21J)

The Combat Engineer provides support on the battlefield as a member of the Combined Arms Team. Tasks include enhancement of friendly mobility, impeding enemy mobility (counter-mobility), enhancement of friendly force survivability, performance of general engineer missions, and, when required, to fight as infantry. Combat Engineers command combat engineer units, and direct or exercise staff supervision over the planning and implementation of the engineer support of the tactical plan. In peacetime, Combat Engineers train for their battlefield functions, and undertake a variety of special tasks that ranges from keeping combat engineer technology current to exporting battlefield engineer expertise to friendly nations. Examples of duty positions are as follows:

(1) Platoon Leader.
(2) Command of Engineer Troop Units.
(3) Recruiting, Inspector General, and Army Readiness Group positions.

Figure 3. Divisional Combat, Corps Combat, and Combat Heavy Engineers have many assets to support the missions of mobility, counter-mobility, and survivability.

5. TOPOGRAPHIC ENGINEER (21C)

The Topographic Engineer serves as the Army's component to the DOD team charged with all mapping, charting, geodesy, and tactical terrain responsibilities for the Armed Services. Topographic Engineers command, direct, and exercise staff supervision of units engaged in topographic missions. Topographic support provides timely and accurate battlefield terrain information to each tactical commander. Topographic Engineers, working closely with combat engineer and military intelligence officers, conduct terrain analyses to enhance friendly force mobility, and support numerous intelligence and operational plans on the Airland battlefield. Other critical topographic engineer battlefield services include cartography and photomapping, photolithography, and topographic surveying. Examples of duty positions are as follows:

(1) Platoon Leader, Topographic Platoon.
(2) Topographic Engineer Unit Commander.
(3) Defense Mapping Agency.
  (a) Defense Mapping School.
  (b) Hydrographic/Topographic Center.
  (c) Aerospace Center and Space Program Positions.
  (d) Office of Distribution Service.
  (e) Inter-American Geodetic Survey.
(4) Engineer Topographic Laboratory.

Figure 4. Engineers use controlled stereo imagery to perform accurate photogrammetric surveys of the terrain for artillery support and for other positioning and targeting needs.

6. FACILITIES/CONTRACT CONSTRUCTION MANAGEMENT ENGINEER (FCCME)(21D)

Engineers in this area of concentration develop the installation master plan and its associated construction program; administer and coordinate engineer contracts; operate utility systems and fire protection service; monitor maintenance of installation facilities, installation housing programs; plan and manage construction of Army and Air Force facilities; manage civil works programs, and coordinate and manage construction contracts for Government agencies. Examples of duty positions are:

(1) Staff and director positions within the Directorate of Engineering and Housing (DEH)/Facilities Engineering (FE) at military installations.
(2) Resident, area, district, and division engineer in military and civil works programs.
(3) Project manager.
(4) Joint Allied positions such as Chief, Infrastructure Branch SHAPE.

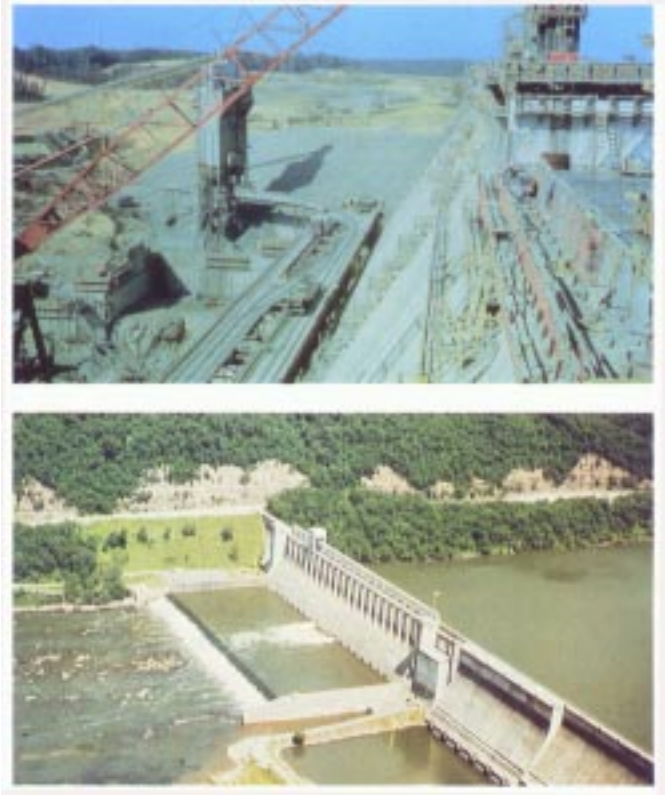

Figure 5. Engineers administer many different civil works programs such as these waterway projects.

7. CAREER PATTERNS AND PROFESSIONAL DEVELOPMENT OBJECTIVES

a. Career Planning.

(1) Engineer career planning is designed to ensure full professional development and effective use of officers while accomplishing the missions of the U. S. Army. The combat arms, combat support, and combat service support roles of the Corps of Engineers provide a wide variety of interesting and challenging assignments. Assignments may be in an Engineer area of concentration; Combat Engineering, Facilities/Contract Construction Management, General Engineering — or in a functional area, such as research and development, force development or operations, plans and training. Engineer officers are expected to be experienced troop leaders and staff officers.

Figure 6. Teamwork and hands on training develop lietenants during the Engineer Officer Basic Course.

Figure 7. The Facility Engineer position offers the officer a demanding environment to develop managerial and leadership skills.

(2) Under the Officer Personnel Management System (OPMS) Engineer officers may single track in the Engineer Branch. The four AOC's - 21A, 21J, 21C, and 21D, which are consolidated as the Engineer Branch, permit adequate assignment flexibility to accommodate the single tracking of Engineer Officers.
Up to sixty percent of Engineer officers may follow a single track. The remaining forty percent will be afforded the opportunity to select a functional area at year seven. Examples of functional areas which Engineer officers should especially consider are Operations Research/Systems Analysis (49); Force Development (50); Research and Development (51); Operations, Plans, and Training (54); and Comptroller (45).

(3) Careers can generally be divided into four recognizable but overlapping periods. Page 13 depicts a typical Engineer officer career pattern. The pattern depicts the opportunities to serve in one of the four Engineer areas of

concentration. For example, the opportunity to serve with troops is greatest for the company grade officer, but narrows significantly for the field grade officer. Again, assignments listed are typical, and not all inclusive.

b. Basic Military Development Period (0-8 years). The goal during this period is the development of a fundamental knowledge of soldiering, engineering and functioning of the Combined Arms Team by the company grade officer. Assignments during this period should focus on troops. Each Engineer officer must demonstrate the competence to command at the company level. The professional development objective for this period is branch qualification. Officers should focus on company level troop experience, completing an advanced course, successfully commanding a company, and serving on battalion/brigade level staff.

(1) Lieutenants will generally be assigned to a company to gain troop experience.

(2) Upon selection to captain, officers will attend an Officer Advanced Course and will be subsequently assigned to afford the officer the maximum opportunity to command.

(3) After command, some officers will gain experience in other Engineer areas of concentration. A few will be exposed to branch immaterial assignments.

(4) Graduate study opportunities will be available to branch qualified Engineer officers selected to fill specific assignments in any of the Army Education Requirements Board certified positions; usually for a three year utilization period.

(5) Some Engineer officers will be given the opportunity to select a functional area at the seventh year of service. Officers selecting a functional area may either dual track or single track in their functional area. Dual track officers will alternate between branch and functional area assignments. Officers single tracking will receive repetitive assignments in their functional area for the remainder of their career.

c. Period of Professional Broadening (9-16 years). The goal during this period is to develop a field grade officer who applies the knowledge and conceptual skills necessary to successfully perform in field grade command and staff positions at all levels of the U. S. Army. Officers should strive to understand the purpose and interrelationship of command and staff procedures.

(1) Engineers must maintain their qualification in combat engineering, but also strive to become qualified in one or more engineer areas of concentration and/or a functional area. The focus is on varied assignments with the emphasis on gaining as much breadth as possible for higher command and staff responsibilities.

(2) Officers who single track in Engineer Branch, must strive to gain troop assignments at battalion and brigade level. Troop experience during this period is an important consideration for battalion command selection.

(3) CAS3 must be completed not later than the 10th year.

(4) During the 10th-14th year of service, an officer may be selected to attend the U. S. Army Command and General Staff College (CGSC), the Armed Forces Staff College, or an equivalent school. Those who are not selected for resident CGSC should work to complete the CGSC nonresident course to enhance their value to the Army. Completion of CGSC is vital for selection to Lieutenant Colonel.

d. Advanced Contribution and Development Period (17-23 years). The goal for this period is to use officers in the specific career fields where they have developed expertise. Assignment patterns should maximize an officer's strengths and potentially selected officers will have the opportunity to command during this period. Assignments in combat engineering decrease markedly while opportunities in functional areas, other Engineer areas of concentration and branch immaterial positions increase.

e. Major Professional Contribution (24 years and over). The goal during this period is to apply the talents developed over the length of a career. Officers will make the maximum contribution to the U. S. Army based on their breadth of experience and expertise developed.

8. PARTICIPATION

a. All Engineer Officers. The job requirements of the Engineer officer will usually require at least a bachelor's degree in an engineering field, physical science, or equivalent practical experience and training. All officers commissioned in the Corps of Engineers will be designated AOC 21J, Combat Engineer, upon entry on active duty.

b. Female Engineer Officers. Participation by female officers can be subdivided into three areas of influence:

(1) Within AOC 21J, Combat Engineer, female officers are currently authorized to serve on corps engineer staffs, brigade staffs and headquarters company positions, and all companies within a combat heavy battalion.

(2) Female officers may serve in all Topographic Engineer (AOC 21C), all FCCME (AOC 21D), Engineer Training Center, and Engineer School positions.

(3) Female officers may serve in all TDA AOC 21J positions.

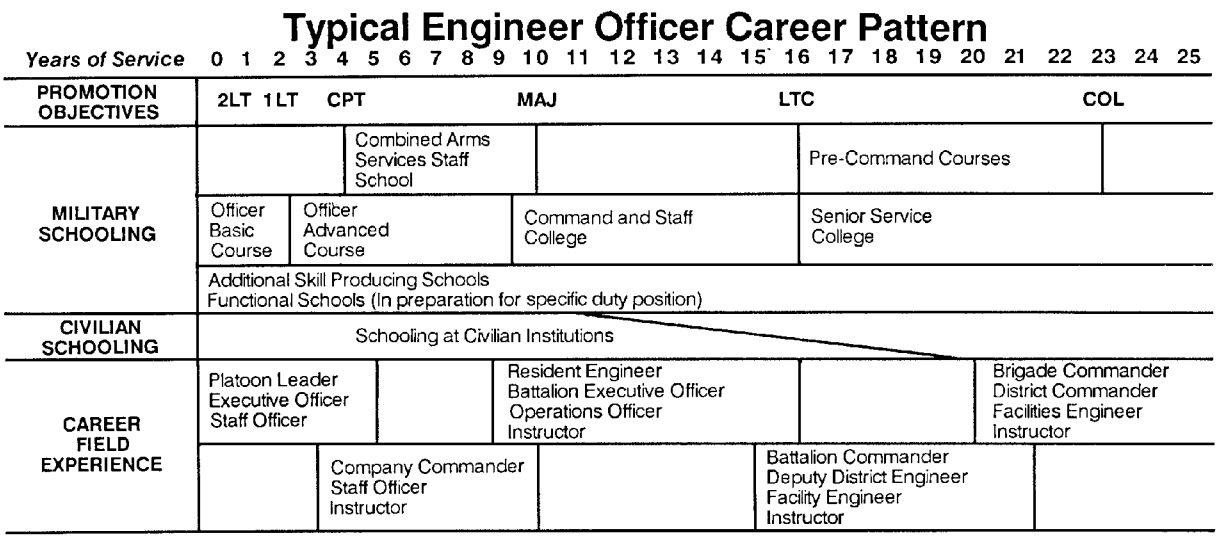

Figure 8. Typical Engineer Officer Career Pattern

9. BRANCH QUALIFICATIONS

The Engineer officer must have completed experience in an Engineer TOE unit, successfully completed the Advanced Course, and successfully commanded a company.

10. US ARMY RESERVE AND NATIONAL GUARD OFFICERS

Because of the unique makeup and constraints of the Reserve Component (RC), participation will normally be limited to a combination of the following types of training:

(1) Troop program unit assignment.
(2) Engineer Officer Basic Course must be completed within 36 months of date of commission.
(3) Individual mobilization augmentee program assignments.
(4) Counterpart training program with active component units.
(5) Attached status for no pay, points only.
(6) Engineer Officer Advanced Course. This course may be completed after completion of basic course, but unit experience recommended.
(7) Army Correspondence Course Program.

Reserve Component officers may receive credit for branch training through the above methods, but there are limited opportunities to receive resident training.

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